

CHAPTER TWELVE

BRAKES

Both the front and rear brakes are drum type and all models are equipped with a parking brake that is cable operated and is integrated into the rear brake assembly. The brake is activated by the hand lever on the left-hand side of the handlebar.

WARNING

*When working on the brake system, never blow off brake components or use compressed air. Do **not** inhale any airborne brake dust as it may contain asbestos, which can cause lung injury and cancer. As an added precaution, wear an approved filtering face mask and thoroughly wash your hands and forearms with warm water and soap after completing any brake work.*

The front drum brake is operated by hydraulic brake fluid and a master cylinder. The rear drum brake is cable operated by both the left-hand brake lever and the foot-operated brake pedal.

Lever and pedal free play must be maintained on both brakes to minimize brake drag and premature brake wear and maximize braking effectiveness. Refer to Chapter Three for complete adjustment procedures.

Both rear brake cables must be inspected and replaced periodically as they will stretch with use until they can no longer be properly adjusted.

Refer to **Table 1** for drum brake specifications. **Table 1** and **Table 2** are located at the end of this chapter.

FRONT BRAKES

Brake Shoe Replacement

Refer to **Figure 1** for 2-wheel drive models or **Figure 2** for 4-wheel drive models for this procedure.

WARNING

When working on the brake system, never blow off brake components or use compressed air. Do **not** inhale any airborne brake dust as it may contain asbestos, which can cause lung injury and cancer. As an added precaution, wear an approved filtering face mask and thoroughly wash your hands and forearms with warm water and soap after completing any brake work.

1. Remove the front wheels as described in Chapter Ten.

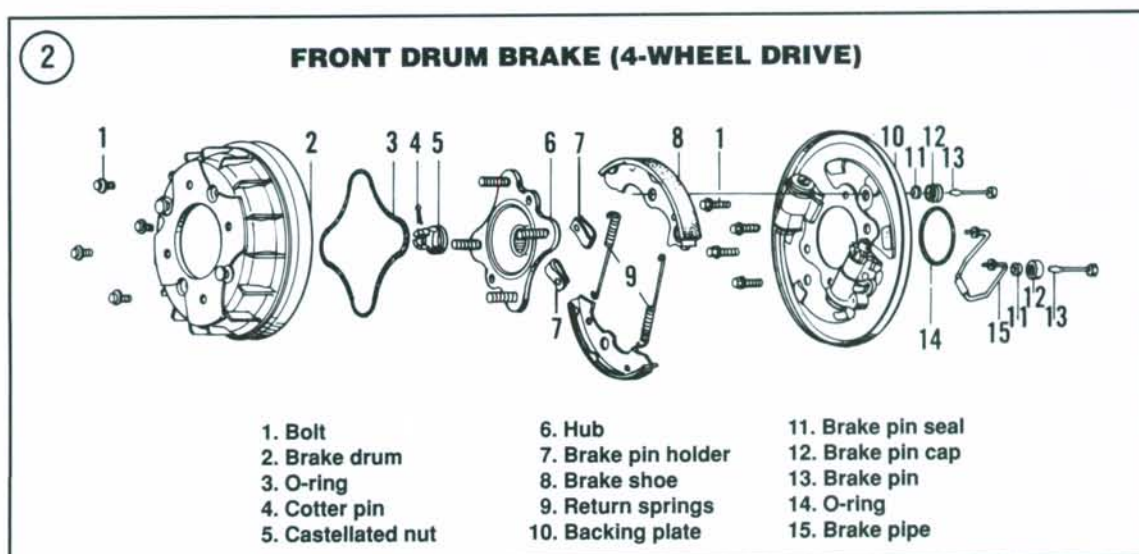
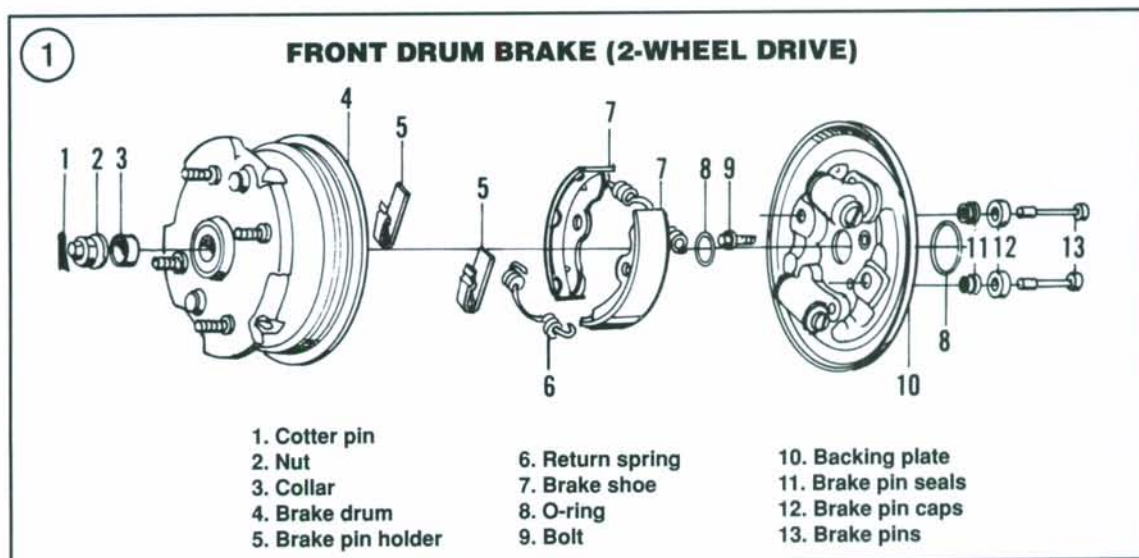
2A. On 2-wheel drive models, perform the following:

- a. Remove the hub nut cotter pin and discard it.
- b. Remove the hub nut and remove the front brake drum. Don't lose the collar behind the hub nut.

2B. On 4-wheel drive models, perform the following:

- a. Remove the bolts (A, **Figure 3**) securing the brake drum to the hub.
- b. Remove the front brake drum (B, **Figure 3**).

3. Measure the brake shoes (A, **Figure 4**) with a Vernier caliper and compare to dimensions listed in



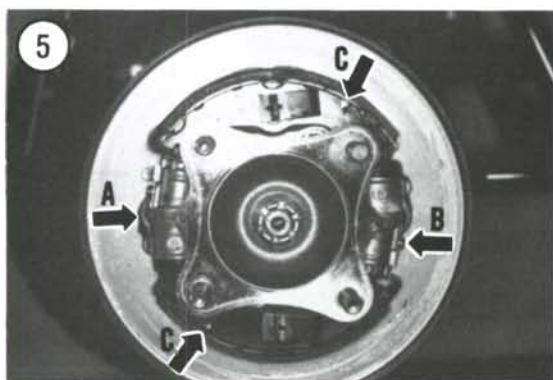
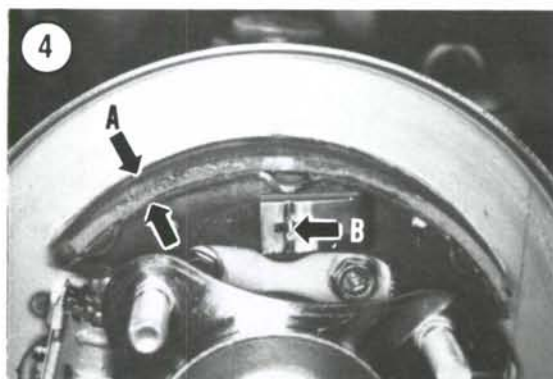
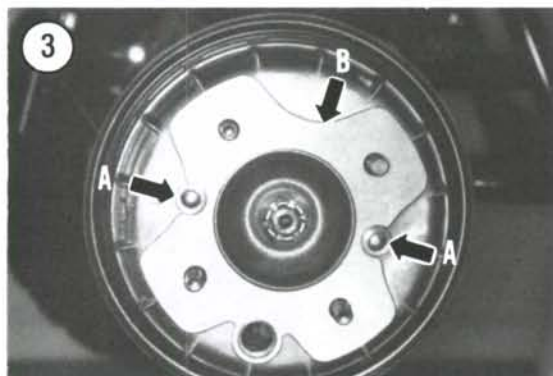


Table 1. If replacement is necessary, continue with this procedure.

4. Using a pair of pliers, rotate the brake shoe hold down pins 90° and remove the pin holders (B, **Figure 4**).
5. Disconnect the brake shoe spring(s) from the brake shoes.
6. Pull the brake shoes out of the notches in the brake shoe adjuster (A, **Figure 5**) and the wheel cylinder (B, **Figure 5**).

NOTE

Place a clean shop rag on the linings to protect them from oil and grease during removal.

7. Remove the brake shoes from the backing plate by firmly pulling out and up on the center of each shoe.
8. Remove the brake shoes (C, **Figure 5**).
9. Inspect the brake components as described in this chapter.
10. Assemble the brake by reversing the disassembly steps. Note the following:

- a. Apply a light coat of silicone grease to the brake shoe locating notches in the wheel cylinder and the brake shoe anchor.
- b. Apply a light coat of silicone grease to the raised pads on the backside of the brake shoes metal plate where the brake shoes ride on the brake backing plate. Avoid getting any grease on the brake linings.
- c. Hold the brake shoes in a "V"-formation with the return springs attached and snap them in place into the brake shoe anchor and wheel cylinder on the brake backing plate. Make sure they are firmly seated on the brake backing plate.

NOTE

If new linings are being installed, file off the leading edge of each shoe a little so that the brake will not grab when applied.

- d. Inspect the brake drum waterproof rubber seal (**Figure 6**) as described in this chapter. Make sure it is in place before installing the brake drum.
- e. On 4-wheel drive models, make sure the large O-ring seal (**Figure 7**) is in place before installing the brake drum.

- f. On 4-wheel drive models, tighten the brake drum mounting bolts securely.
11. Adjust the front brakes as described in Chapter Three.

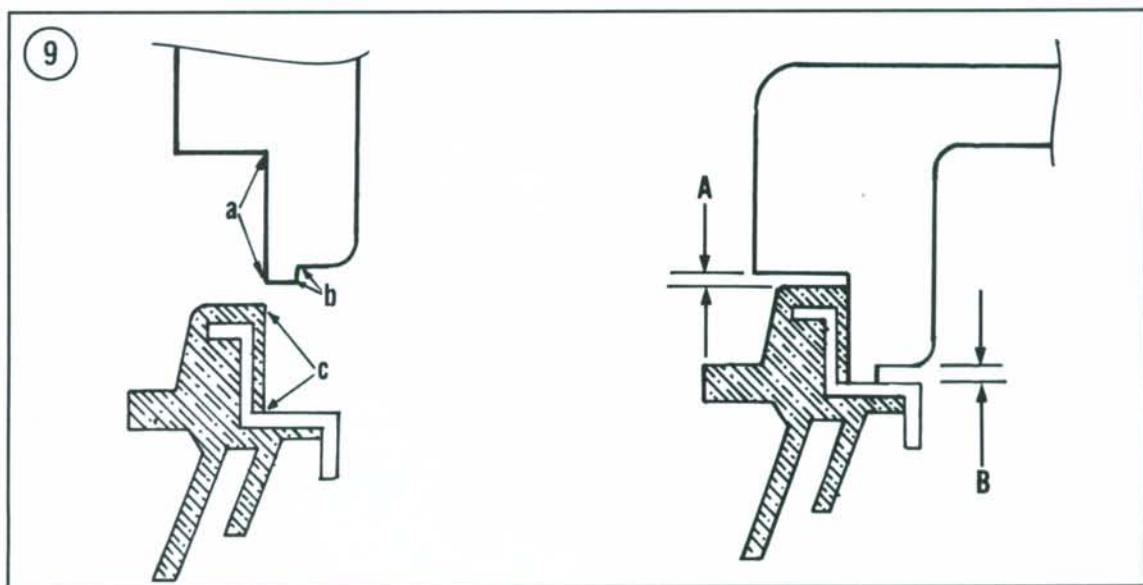
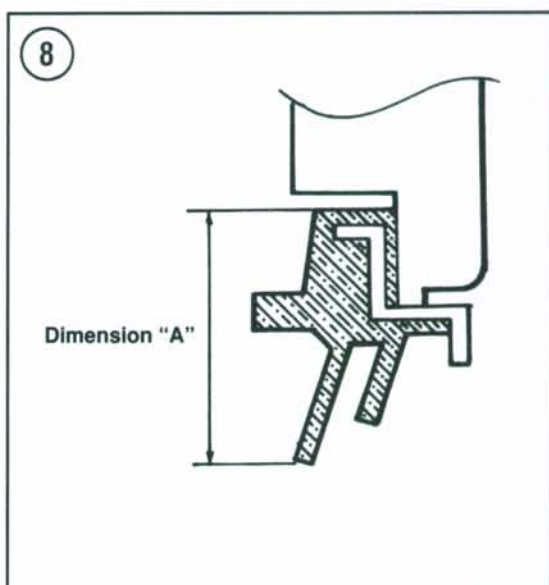
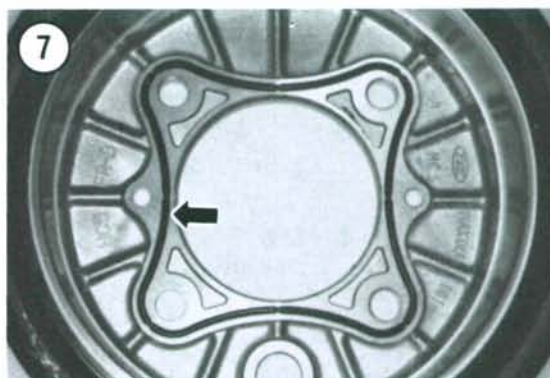
Brake Drum Waterproof Seal Inspection and Replacement

The brake drum waterproof seal is very important since it keeps water out of the brake components attached to the inner surface of the brake panel. It is important to thoroughly inspect this seal and replace it when necessary to avoid premature replacement of brake panel components due to unwanted moisture.

1. Inspect the waterproof seal (**Figure 6**) for wear, damage, hardness or deterioration.
2. Use a Vernier caliper and measure the waterproof seal lip length, dimension "A" (**Figure 8**). Refer to **Table 1** for service length specifications and replace the seal if worn to the service limit dimension or less.
3. On 4-wheel drive models, remove the front wheel hub as described in Chapter Ten.

NOTE

The following dimensions must be calculated because the inner portion of the waterproof seal and its armature cannot be seen when pushing the seal into the brake drum.



4A. On 2-wheel drive models, perform the following:

- a. Measure the brake drum and seal as shown in "a," "b" and "c" in **Figure 9**.
- b. Calculate the clearances "A" and "B" between the brake drum and the seal. "A" = "a" - "c" and "B" = "b."
- c. When the new waterproof seal is installed correctly, dimension "A" will equal "B."

4B. On 4-wheel drive models, perform the following:

- a. Measure the brake drum and seal as shown in "d," "e," "f" and "g" in **Figure 10**.
 - b. Calculate the clearances "C" and "D" between the brake drum and the seal. "C" = "d" - "f" and "D" = "g" - "e."
 - c. When the new waterproof seal is installed correctly, dimension "C" will equal "D."
5. Apply clean water to all surfaces of the new waterproof seal (**Figure 11**) and to the surface plate.

CAUTION

On 4-wheel drive models, the brake drum must be backed up with a piece of steel to prevent it from being warped or damaged. Place a steel plate about 140 mm (5.5 in.) in diameter and more than 10 mm (0.4 in.) thick on the brake drum during Step 6.

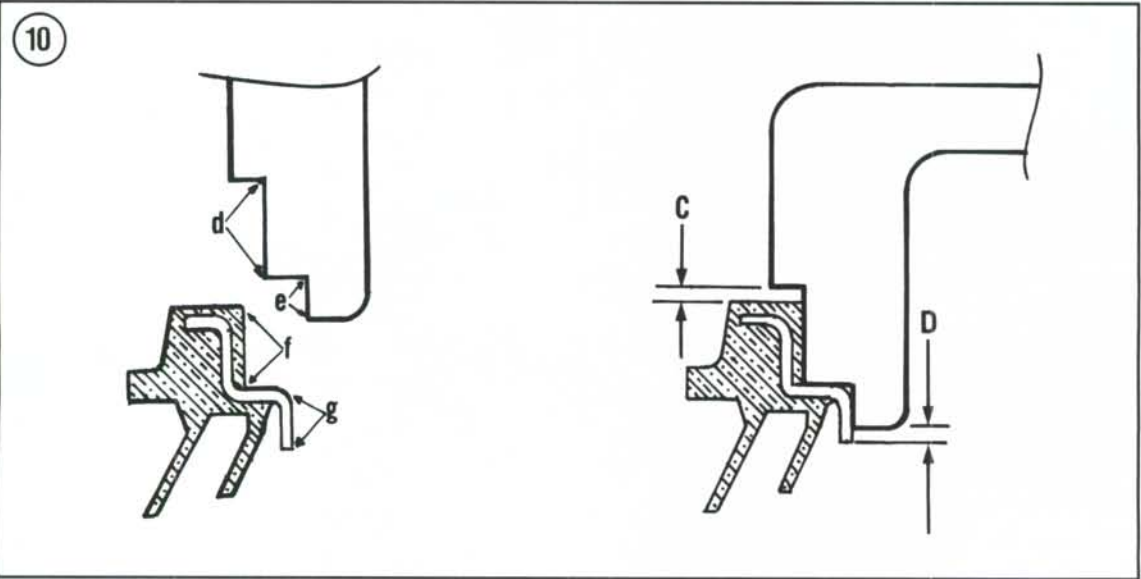
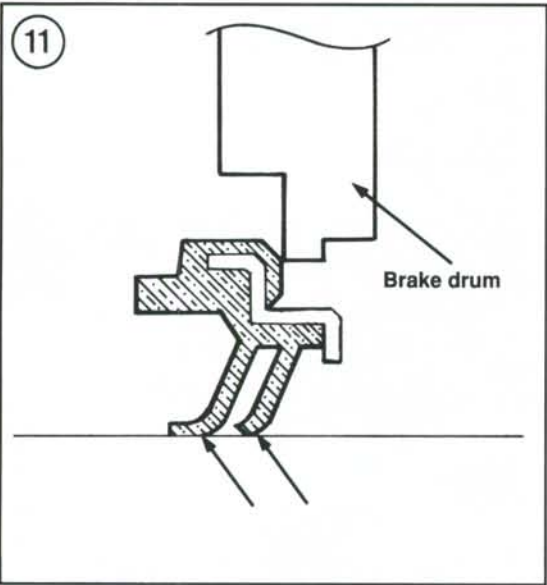
NOTE

If the seal gets installed incorrectly, carefully remove it and start over.

CAUTION

*Do not exert too much pressure on the seal during installation, as the seal will be damaged as shown in **Figure 12**.*

6. Place the new seal on a clean surface plate, then slowly and squarely press the brake drum (and steel backup plate on 4-wheel drive models) onto the new seal. Continue to press on the brake drum and frequently check the clearance between the seal and the



drum. Refer to the dimensions calculated in Step 4A or Step 4B. This dimension must be the same all around the perimeter of the brake drum. If the clearance is not equal, the seal will either not seal properly or will wear prematurely.

7. After the seal has been installed correctly with the uniform clearance all around the perimeter, wipe all water from the seal with a lint free cloth.

WARNING

Do not get any grease on the inner surface of the brake drum where the brake shoe linings make contact, as they will become contaminated and stopping distances will be increased. If grease does get onto the brake drum in this area, thoroughly clean off all grease residue with lacquer thinner.

8. Uniformly pack the sealing lips cavity (**Figure 13**) with multipurpose grease (NLGI No. 3) as shown in **Figure 14**. Apply the following amount of grease:

- a. 2-wheel drive: 12-14 grams (0.4-0.5 oz.).
- b. 4-wheel drive: 14-16 grams (0.5-0.6 oz.).

9. On 4-wheel drive models, install the front wheel hub as described in Chapter Ten.

Brake Panel

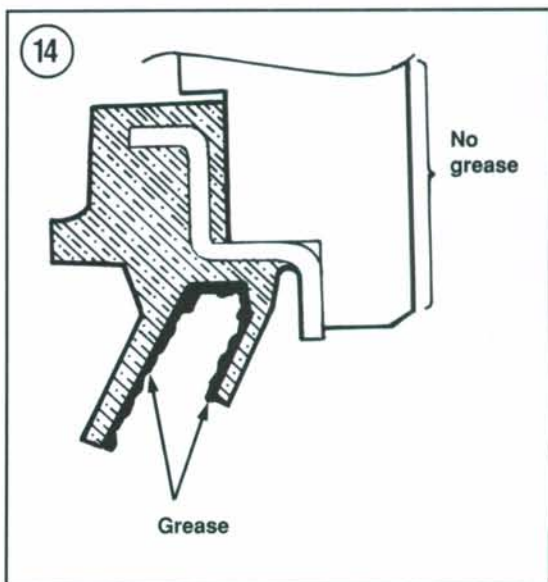
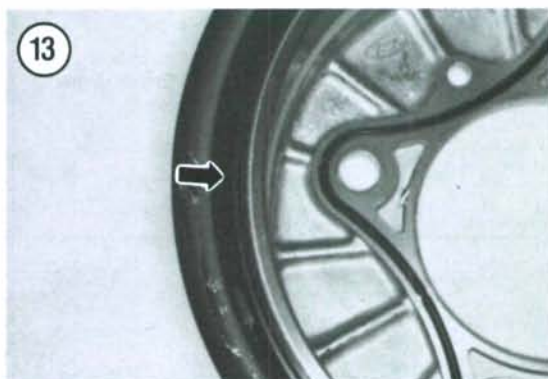
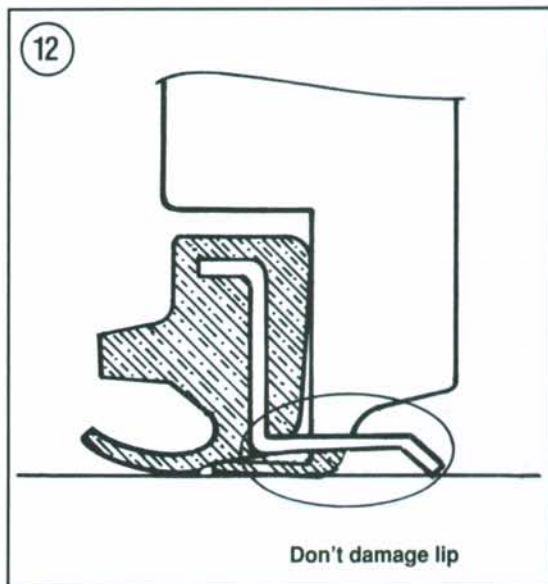
Removal/Inspection/Installation (2-Wheel Drive)

Refer to **Figure 1** for this procedure.

1. Remove the brake shoes as described in this chapter.
2. Disconnect the hydraulic brake hose as follows:
 - a. Use an open end wrench and hold the fitting on the brake hose to keep it from turning.
 - b. Use another open end wrench and loosen the joint nut on the backside of the brake panel.
 - c. Unscrew the joint nut from the brake hose and disconnect the brake hose. Plug the end of the brake hose with a golf tee and tie it up to the shock absorber to prevent the loss of brake fluid.
3. Disconnect the brake panel breather tube.

CAUTION

The threads of the brake panel mounting bolts are treated with a special dry-coated material for waterproofing. This protective coating is destroyed once the bolt is used and therefore it cannot be

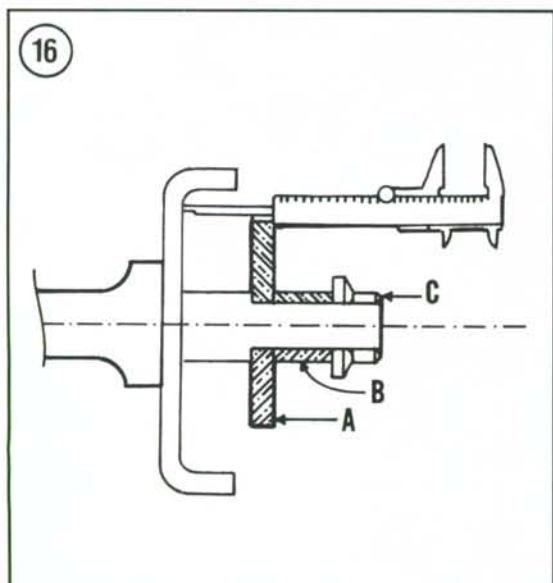
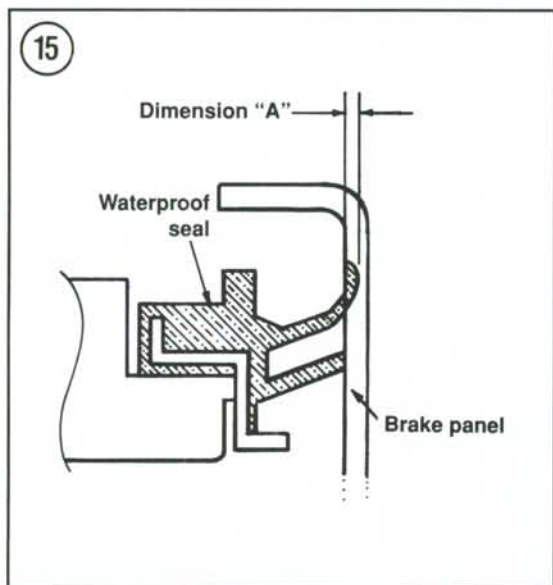


reused. **Never** reinstall one of these bolts after it has been removed.

4. Remove the bolts securing the brake panel to the steering knuckle and remove the brake panel. *Discard* the bolts as they cannot be reused.

5. Remove the brake panel and the O-ring seal from the steering knuckle.

6. Inspect the area of the brake panel where the brake drum waterproof seal makes contact. If any portion of the area is worn down 0.5 mm (0.02 in.) as shown



in **Figure 15**, (dimension "A"), the brake panel must be replaced.

7. To check the brake panel runout, perform the following:

- Temporarily reinstall the brake panel with the wheel cylinder and adjuster removed.
- Clean off any grease from the brake panel where the brake drum seal rides.
- Install a suitable size *flat* metal plate (A, **Figure 16**) and collar (B, **Figure 16**) onto the steering knuckle and secure both parts with the front axle nut (C, **Figure 16**). Tighten the nut securely.
- Use the depth gauge portion of a Vernier caliper and measure the distance from the attached plate to the brake panel surface at several points. If there is a variation of 0.4 mm (0.02 in.) or more, the brake panel is warped and must be replaced.
- Remove the brake panel from the steering knuckle.

8. Install by reversing these removal steps while noting the following:

- Install a new O-ring seal on the steering knuckle.

CAUTION

Always use new mounting bolts that have the special dry-coated material that is necessary for waterproofing. On the old bolts, this protective coating was damaged when the bolts were removed.

- Install the brake panel and install *new* mounting bolts. Tighten the bolts to the torque specification listed in **Table 2**.
- Screw the brake hose onto the joint nut on the backside of the wheel cylinder.
- Use an open end wrench and hold the fitting on the brake hose to keep it from turning.
- Use another open end wrench and tighten the joint nut onto the brake hose. Tighten to the torque specification listed in **Table 2**.

Brake Panel Removal/Inspection/Installation (4-Wheel Drive)

Refer to **Figure 2** for this procedure.

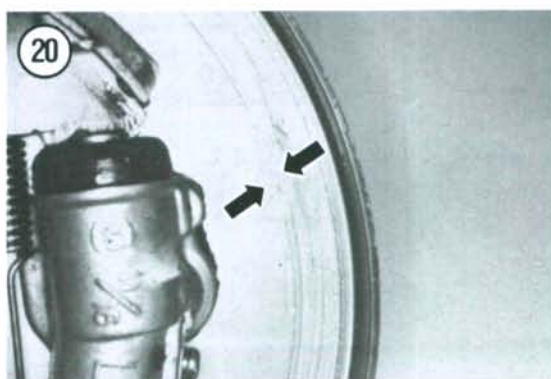
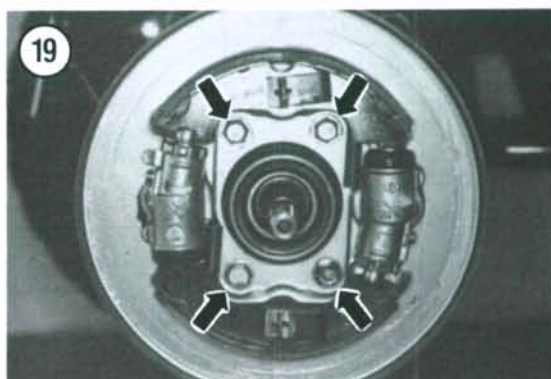
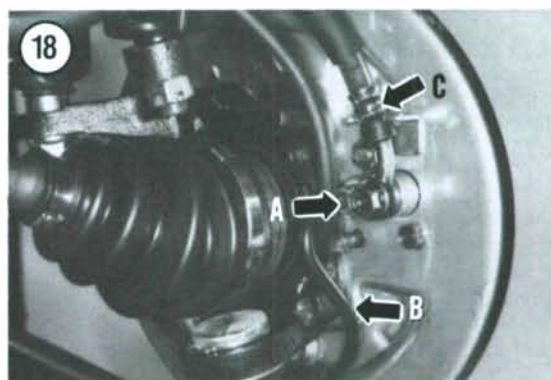
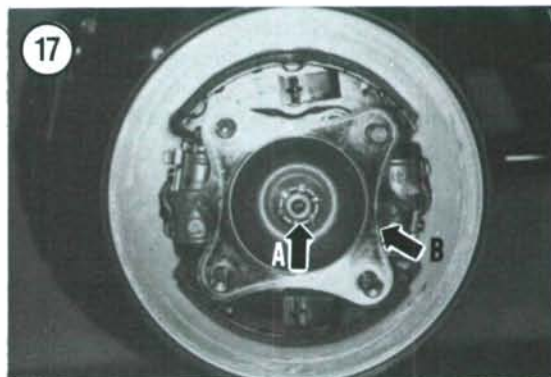
1. Remove the brake shoes as described in this chapter.

2. If the front hub is still in place, perform the following:
 - a. Remove the front hub nut cotter pin and discard it.
 - b. Remove the hub nut (A, **Figure 17**) and remove the front hub (B, **Figure 17**).
3. Disconnect the hydraulic brake hose as follows:
 - a. Disconnect the union bolt (A, **Figure 18**) and sealing washers securing the hydraulic brake hose to the front wheel cylinder.
 - b. Disconnect the brake hose and plug the end of the brake hose then tie it up to the shock absorber to prevent the loss of brake fluid.
4. Disconnect the brake panel breather tube (B, **Figure 18**).

CAUTION

*The threads of the brake panel mounting bolts are treated with a special dry-coated material for waterproofing. This protective coating is destroyed once the bolt is used and therefore it cannot be reused. **Never** reinstall one of these bolts after it has been removed.*

5. Remove the bolts (**Figure 19**) securing the brake panel to the steering knuckle and remove the brake panel. *Discard* the bolts as they cannot be reused.
6. Remove the brake panel and the O-ring seal from the steering knuckle.
7. Inspect the area of the brake panel where the brake drum waterproof seal makes contact (**Figure 20**). If any portion of the area is worn down 0.5 mm (0.02 in.) as shown in **Figure 15** (dimension "A"), the brake panel must be replaced.
8. To check the brake panel runout, perform the following:
 - a. Temporarily remove the brake drum from the wheel hub and reinstall the hub on the axle shaft. Tighten the nut securely.
 - b. Clean off any grease from the brake panel where the brake drum seal rides.
 - c. Install a metal plate (A, **Figure 21**) onto the wheel hub and secure it with a wheel lug nut. Tighten the lug nut securely.
 - d. Attach a dial indicator (B, **Figure 21**) to the metal plate and place the pointer in the area where the brake drum seal rides.
 - e. Slowly rotate the wheel hub and check for warpage. If there is a variation of 0.4 mm (0.02

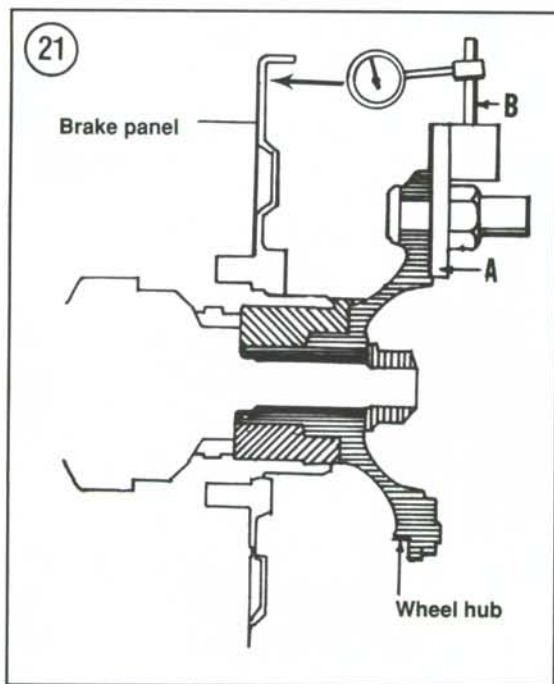


in.) or more, the brake panel is warped and must be replaced.

- f. Remove the dial indicator and metal plate.
 - g. Remove the wheel hub and reattach the brake drum to the wheel hub.
 - h. Remove the brake panel from the steering knuckle.
9. Install by reversing these removal steps while noting the following:
- a. Install a new O-ring seal (**Figure 22**) on the steering knuckle. Apply clean engine oil to the O-ring seal.

CAUTION

Always use new mounting bolts that have the special dry-coated material



that is necessary for waterproofing. On the old bolts, this protective coating was damaged when the bolts were removed.

- b. Install the brake panel and install *new* mounting bolts. Tighten the bolts to the torque specification listed in **Table 2**.
 - c. Position the brake hose end between the stoppers (C, **Figure 18**) on the backside of the brake panel.
 - d. Install the breather hose (B, **Figure 18**) onto the fitting on the brake panel.
 - e. Install a *new* sealing washer on each side of the hydraulic brake hose fitting and tighten the union bolt (A, **Figure 18**) to the torque specification listed in **Table 2**.
10. Bleed the brake system as described in this chapter.

Wheel Cylinder and Adjuster Removal/Installation (2-Wheel Drive)

It is suggested that the wheel cylinder be replaced with a new unit instead of rebuilding it even though replacement parts are available. If worn, leaking or damaged in any way, replace the wheel cylinder assembly. The adjuster can be inspected and internal parts replaced if necessary.

Refer to **Figure 1** for this procedure.

1. Remove the brake panel as described in this chapter.
2. Remove the bolts and washers securing the wheel cylinder and the adjuster to the brake panel.
3. Remove the wheel cylinder and the adjuster from the brake panel.
4. Clean off the area where the wheel cylinder and adjuster attaches to the brake backing plate. Remove all traces of old gasket material.
5. Inspect the adjuster as follows:
 - a. Remove the screw securing the lock spring and remove the spring.
 - b. Remove both adjusters from the body.
 - c. Clean all parts in solvent and thoroughly dry with compressed air.
 - d. Inspect all parts for wear or damage, replace as a unit if any parts are faulty.
 - e. Apply a light coat of high-temperature silicone grease to each adjuster where it rides in the adjuster unit body.

NOTE

The adjuster with left-hand threads must be installed on the left-hand side (as looking at the brake panel) in order for the adjuster to operate correctly.

- f. Install both adjusters into the body and install the lock spring and screw. Tighten the screw securely.
6. Apply a light coat of Gasegacinch, Three Bond No. 1104 or equivalent to the back of the wheel cylinder and adjuster and its mounting area of the brake backing plate.
7. Install the wheel cylinder and the adjuster, then install the bolts and washers, then tighten to the torque specification listed in **Table 2**.
8. Install the brake panel as described in this chapter.

Wheel Cylinder/Adjuster Removal/Installation (4-Wheel Drive)

It is suggested that the wheel cylinder/adjuster(s) be replaced with a new unit instead of rebuilding it even though replacement parts are available. If worn, leaking or damaged in any way, replace the wheel cylinder assembly. The adjuster can be inspected and internal parts replaced if necessary.

Refer to **Figure 2** for this procedure.

1. Remove the brake panel as described in this chapter.
2. If not already removed, remove the brake shoes (A, **Figure 23**).
3. Using an open end wrench, loosen then disconnect the brake pipe joint nut (A, **Figure 24**) on the backside of each wheel cylinder/adjuster.
4. Remove the brake pipe (B, **Figure 24**).
5. Remove the bolts and the nuts and washers (C, **Figure 24**) securing each wheel cylinder/adjuster to the brake panel.
6. Remove both wheel cylinder/adjusters (B, **Figure 23**) from the brake panel.
7. Clean off the area where the wheel cylinder/adjusters were attached to the brake backing plate. Remove all traces of old gasket material.
8. Do not remove the boot or piston from the wheel cylinder/adjuster.
9. Inspect the adjuster as follows:
 - a. Remove the screw securing the lock spring and remove the spring.

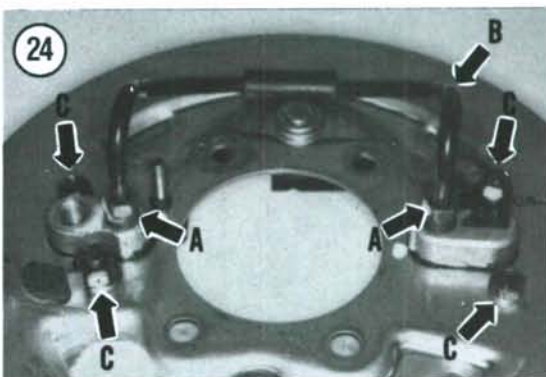
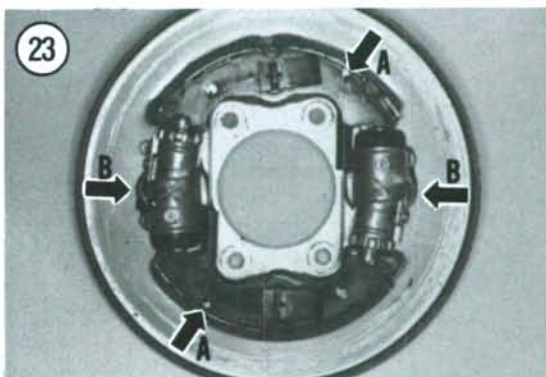
- b. Remove the adjuster from the body.
- c. Clean all parts in solvent and thoroughly dry with compressed air.
- d. Inspect all parts for wear or damage, replace as a unit if any parts are faulty.
- e. Apply a light coat of high-temperature silicone grease to each adjuster where it rides in the adjuster unit body.
- f. Install both adjusters into the body and install the lock spring and screw. Tighten the screw securely.

10. Apply a light coat of Gasegacinch, Three Bond No. 1104 or equivalent to the back of the wheel cylinder and adjuster and its mounting area of the brake backing plate.

11. Install the wheel cylinder/adjuster, then install the bolts (A, **Figure 25**) and the nuts and washers (B, **Figure 25**). Tighten to the torque specification listed in **Table 2**.

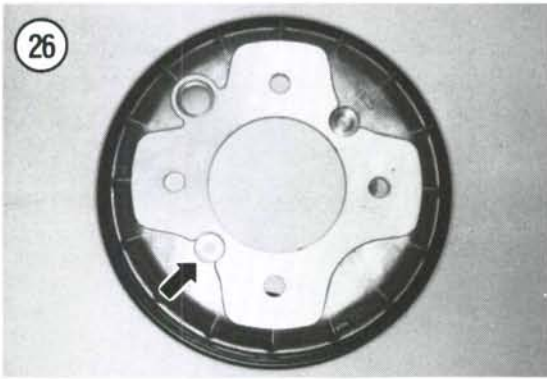
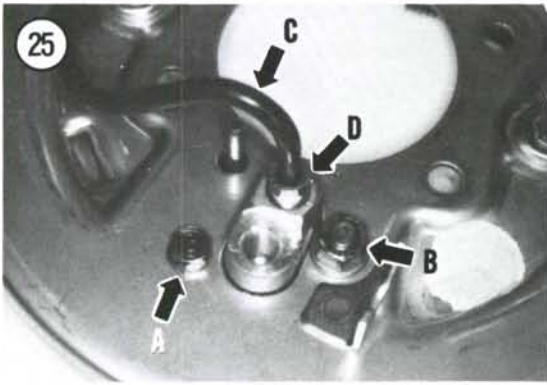
12. Install the brake pipe (C, **Figure 25**) and joint nuts (D, **Figure 25**). Tighten to the torque specification listed in **Table 2**.

13. Install the brake panel as described in this chapter.



Brake Drum Inspection

1. Inspect the drum (**Figure 26**) for any damage or fractures. Replace if necessary.
2. Check the contact surface of the drum (**Figure 27**) for scoring. If there are grooves deep enough to snag a fingernail, the drum should be reground and new shoes fitted. This type of wear can be avoided to a great extent if the brakes are disassembled and thoroughly cleaned after riding the vehicle in water, mud or deep sand.



NOTE

If oil or grease is on the drum surface, clean it off with a clean rag soaked in lacquer thinner—do not use any solvent that may leave an oil residue.

3. Use a Vernier caliper and check the inside diameter of the drum for out-of-round or excessive wear. Turn the drum if it will still be within the service limit dimension. Replace the drum if it is worn to the service limit listed in **Table 1** or greater.
4. If the drum is turned, the linings will have to be replaced and the new linings arced to the new drum contour.
5. Measure the brake linings with a Vernier caliper. They should be replaced if worn to the service limit (distance from the metal backing plate) or less as listed in **Table 1**.

REAR DRUM BRAKE

Brake Shoe Replacement

Refer to **Figure 28** for this procedure.

NOTE

Honda has determined that there may be a "loud squeal" problem when the rear brake is applied on 1988 and 1989 2-wheel drive models and 1988 4-wheel drive models. To solve this problem, the anchor pin radius was changed on the new set of revised brake shoes. This problem was covered in the Honda Service Department Wrench publication of August 1989. If you are having this problem and the vehicle is still covered by any applicable warranty, take the vehicle to the Honda dealer and have the problem corrected.

1. Place the vehicle on level ground and set the parking brake.
2. Remove the right-hand rear wheel as described in Chapter Eleven.
3. Remove the cotter pin and castellated axle nut (**Figure 29**) securing the right-hand wheel hub to the rear axle. Discard the cotter pin.
4. Remove the washer (A, **Figure 30**) right-hand rear wheel hub (B, **Figure 30**).

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